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ABSTRACT

This instructor's edition provides an overview of Problem-Based Learning (PBL). PBL organizes students into teams that work on projects to achieve the learning objectives embedded in each PBL project. The focus of this PBL project is managing technological change. The project is structured around a high-impact problem--one that has the potential to affect large numbers of people--that administrators are likely to face. The guide discusses how instructors might set the stage for the project, foreshadows issues that might arise during the project, and suggests possible topics that the instructor might raise when giving feedback to students. The booklet guides participants through critical issues relevant to information technology in schools so as to prepare students for sustaining long-term technology initiatives in schools. It discusses challenges facing schools, challenges in implementing PBLP, learning objectives, products, and guiding questions. The text deals not only with issues such as staff resistance and budgetary constraints, but also explores new models for using technology in schools, implications of technology for instruction and learning, technology's role in restructuring, and the development of a long-term technology plan that takes into account the needs of students, teachers, and parents. Four appendices offer further information. (RJM)

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ED 434 419

MANAGING TECHNOLOGICAL CHANGE

For Schools of The New Millennium

INSTRUCTOR EDITION

PHILIP HALLINGER
JOSEPH SLOWINSKI
BRENDA RODRIGUEZ

PROBLEM-BASED LEARNING PROJECT

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PROBLEM-BASED
LEARNING
PROJECT

1999

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ERIC CLEARINGHOUSE ON EDUCATIONAL MANAGEMENT
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NORTH CENTRAL REGIONAL EDUCATIONAL LABORATORY
OAK BROOK, ILLINOIS

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ERIC Clearinghouse on Educational Management
University of Oregon
1787 Agate Street
Eugene, OR 97403-5207
(541) 346-5043, (800) 438-8841 (voice)
(541) 346-2334 (fax)

Philip K. Piele, Professor and Director

Website: http://eric.uoregon.edu
Email: eric@eric.uoregon.edu

In cooperation with
North Central Regional Educational Laboratory
Brenda M. Rodriguez, Director
Center for School and Community Development (CSCD)
1900 Spring Road, Suite 300
Oak Brook, IL 60523-1480
(630) 571-4700, (800) 356-2735 (voice)
(630) 571-4716 (fax)

Gina Burkhardt, Executive Director

Website: www.ncrel.org
Email: info@ncrel.org

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THE AUTHORS

Philip Hallinger is Associate Professor of Educational Leadership at Vanderbilt University and at the Center for Leadership Research and Development at Chiang Mai University. He has published extensively on issues of principal leadership, school improvement, and leadership development. He has served as the director of several leadership development centers and currently directs Vanderbilt University's International Institute for Principals. His current interests focus on international issues in school improvement and the cultural foundations of leadership as well as problem-based leadership development.

Joseph Slowinski is a Program Associate at the North Central Regional Educational Laboratory where he conducts policy research on a variety of technological issues related to education. He is widely published in the areas of educational technology as well as Central and Eastern European education. He has been an Associate Instructor for the past three years in the Indiana University system where he has taught social foundations and computers in education courses at the Bloomington and Northwest campuses. His current research interests include the technological preparation of preservice educators as well as the social impact of an emergent information age. He also serves as a review board member of the international journal *Information Technology, Education, and Society*.

Brenda M. Rodriguez currently serves as Director of the Center for School and Community Development at the North Central Regional Educational Laboratories (NCREL) in Oakbrook, Illinois. She manages three initiatives that support school and community engagement in the areas of school reform, leadership development, and school-community collaboration and integration. Her primary focus has been to coordinate technical-assistance and professional-development services to highly diverse Chicago public schools. She also teaches courses in bilingual education and assessment, and courses for health and human-service professionals in the area of cultural diversity, cross-cultural communication, and program and service implementation.

She has written numerous articles and developed and conducted training on a broad range of leadership, diversity, and program-development issues. Her doctoral work is in political science with an emphasis on race, class, and gender issues; the politics of education; and the development and implementation of community-empowerment issues, public policy, and social justice. She is multilingual and has lived in the Dominican Republic, Turkey, and Japan.

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PROBLEM-BASED
LEARNING PROJECTS

Problem-Based Learning (PBL) is an instructional strategy for preparing administrators that was developed at Stanford University and later field-tested at Vanderbilt University. This unique instructional strategy is fully explicated in *Problem-Based Learning for Administrators* (Edwin M. Bridges with Philip Hallinger, ERIC Clearinghouse on Educational Management, 1992) and *Implementing Problem-Based Learning in Leadership Development* (Edwin M. Bridges and Philip Hallinger, ERIC Clearinghouse on Educational Management, 1995).

The basic unit of instruction in a PBL curriculum is a project. Students are organized into teams and work on these projects to grapple with the problem and to achieve the learning objectives that are embedded in each PBL project. The eight features of each project are discussed in the paragraphs that follow.

1. *An Introduction.* This component introduces the student to the focal problem for the project and provides a rationale for including the problem in the curriculum.

2. *Problem.* Each project is structured around a high-impact problem that the administrator is apt to face in the future. A high-impact problem is one that has the potential to affect large numbers of people for an extended period. Some of these problems are highly structured, while others are complex, messy, and ill-defined.

3. *Learning objectives.* These objectives, limited in number, signal what knowledge and skills the student is expected to acquire during the project.

4. *Resources.* For each project, the student receives one or more of the following resources: books, articles, videotapes or films, and consultants

(professors or practicing administrators). The specific nature of the resources depends upon the learning objectives and the problem that is the focal point of the project. Students are also encouraged to exploit the resources that exist in their own school districts.

5. *Product specifications.* Each project culminates with some type of performance (for example, oral presentation), product (such as a memo), or both. The specifications spell out what should be included in the performance or the product. To make these projects as realistic as possible, the product specifications are frequently ambiguous. This ambiguity creates some of the risk and uncertainty that are inherent in any project; moreover, the ambiguity affords students with leeway (the amount varies from one project to another) in defining the problem and attacking it.

6. *Guiding questions.* Two types of guiding questions may be provided with the project. One type directs students to key concepts; the other type assists students in thinking through the problem.

7. *Assessment exercises.* Assessment takes several forms. Each project contains a "Talk Back" sheet that invites students to offer suggestions for improving the project. In addition, students are encouraged to prepare an essay that reflects what they have learned during the project.

8. *Time constraints.* Most projects are designed to last from two to five sessions; each session is three hours long. Projects terminate when the learning and product objectives are achieved. The clock is a constant enemy in problem-based learning projects. Team members find themselves con-

tinually struggling with the dilemma that confronts every conscientious manager, namely, how to achieve some reasonably high level of performance within severe time constraints. Managing this dilemma requires participants to make difficult choices and to set priorities (such as family vs. work, quantity vs. quality of output, and learning objectives vs. product objectives). Moreover, the dilemma underscores the need to work efficiently and to adopt time-saving measures.

In addition to these features, the Instructor Edition of every PBL project includes a *Teaching Note*. If you are an instructor, this *Teaching Note* gives you an overview of the project, discusses how you might set the stage for the project, foreshadows issues that might arise during the project, and suggests possible topics that the instructor might raise when giving feedback to students.

If you are interested in learning more about this instructional strategy and other PBL projects, we encourage you to read *Problem-Based Learning for Administrators* and *Implementing Problem-Based Learning in Leadership Development* and to request additional information from the ERIC Clearinghouse on Educational Management.

Should you have any questions or want to share the experiences you had with this project, please phone or write:

Philip Hallinger, P.O. Box 514, Peabody College, Vanderbilt University, Nashville, Tennessee 37203 (615-343-7092). Email: philip.hallinger@vanderbilt.edu

RESOURCES ON PROBLEM-BASED LEARNING

Available from ERIC/CEM

Books

Implementing Problem-Based Learning in Leadership Development

Edwin M. Bridges and Philip Hallinger • 1995 • xii + 194 pages • perfect (sew/wrap) bind • ISBN 0-86552-131-X • $14.95. **Code: EMOIPB**

This book builds on the authors' experiences in using problem-based learning in a variety of settings. They discuss the operation of PBL in the classroom and describe their template for developing PBL instructional materials. In examining the role of the instructor, the authors highlight the attitudes, thinking, and behaviors essential to successful implementation of PBL. They also address evaluation of student performance, and illustrate options for incorporating PBL into Ed.D. research projects. By incorporating numerous examples and the perspectives of students, the authors have endeavored to put a face on PBL.

Problem-Based Learning for Administrators

Edwin M. Bridges, with the assistance of Philip Hallinger • 1992 • xii + 164 pages • perfect (sew/wrap) bind • ISBN 0-86552-117-4 • $12.95. **Code: EMOPBL**

Professor Bridges spent five years developing, field testing, and refining PBL for use in educational-management classes, and this book is the record of what he has learned. Using student essays, detailed descriptions of actual projects, data from PBL in the medical field, and his own observations, Bridges illustrates how PBL teaches leadership, management, and communication skills to administrative students. Appendix includes three PBL projects.

PBL Projects

In a PBL environment, instructors present students with problematic situations called *projects*. A project is the basic unit of instruction in a PBL curriculum. Although the problems are simulated, students experience them as real. Working together in small teams, students assume responsibility for responding to the problems they are presented with. Instead of functioning as dispensers of knowledge, PBL instructors serve as observers and advisors.

Instructor and Student Editions

The authors have created two versions of each project—a student edition and an instructor edition. The instructor edition includes an extra section called a *Teaching Note*, which offers an overview of the project, suggests ways of setting the stage for the project, informs instructors of issues that may surface during the course of the project, and recommends topics instructors may wish to address when offering feedback to students.

For instructors' convenience, project authors have compiled a range of required and optional reading materials for students to review and digest prior to the start of each project simulation. Appearing at the back of each project, these appended materials give students a background of pertinent information to draw from when confronting issues integral to the projects. Fees paid to the copyright holders for reproduction of these materials are included in the price of each project.

Managing Technological Change for Schools of the New Millennium

Philip Hallinger, Joseph Slowinski, and Brenda Rodriguez • 1999 • *Instructor Edition*: ISBN: 0-86552-145-X • 46 pages plus 6 pages Teaching Note • $7.50 • **Code: EPRTCI.** *Student Edition*: ISBN: 0-86552-146-8 • 46 pages • $7.00 • **Code: EPRTCS**

Copublished by ERIC/CEM and the North Central Regional Educational Laboratory (NCREL), this project asks students to assume the role of a principal who is confronted with how best to implement new learning technologies.

The project deals not only with issues such as staff resistance and budgetary constraints, but also explores new models for using technology in schools, the implications of technology for instruction and learning, the role technology can play in restructuring, and the development of a long-term technology plan that takes into account the needs of students, teachers, and parents.

Charter Schools

Philip Hallinger • 1999 • Text, 14 pages; reading materials, 77 pages • *Instructor Edition*: • ISBN: 0-86552-139-5 • $21.00 • **Code: EPRCSI.** • *Student Edition*: • ISBN: 0-86552-142-5 • $20.00 • **Code: EPRCSS**

Copublished by ERIC/CEM and the North Central Regional Educational Laboratory (NCREL), this project teaches students the difficulties that may be encountered in the foundation of a charter school. The problem concerns all aspects of a charter school's foundation: beliefs about learning, strategies for achieving racial/

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ethnic balance, governance structure and management organization, as well as legislative and fiscal matters.

[Reading materials include, by special arrangement with Jossey-Bass Publishers, a paper edition of *Charter Schools*, by Joe Nathan, 1996. Retails for $18.00.]

Time Management: Work of the Principal

Edwin M. Bridges • 1994 • Text, 57 pages; reading materials, 106 pages • *Instructor Edition*: ISBN: 0-86552-122-0 • $15.00 • **Code: EPRTMI.** • *Student Edition*: ISBN: 0-86552-127-2 • $14.00 • **Code: EPRTMS**

Students participate in a simulation involving a range of activities and problems—handling correspondence, dealing with interruptions, conducting a classroom observation, holding an unscheduled meeting with a hostile parent, and making an oral presentation to a group of concerned parents.

Write Right!

Edwin M. Bridges • 1994 • Text, 19 pages; reading materials, 34 pages • *Instructor Edition*: ISBN: 0-86552-125-5 • $6.00 • **Code: EPRWRI.** *Student Edition*: ISBN: 0-86552-129-8 • $5.50 • **Code: EPRWRS**

Since writing is a central communication tool used by principals, principals-in-training must hone their writing skills. This project focuses on organizing, preparing, and editing written communication; it gives special attention to memos, the principal's most frequently used form of written communication.

Leadership and School Culture

Philip Hallinger and Barbara L. Habschmidt • 1994 • Text, 21 pages; reading materials, 155 pages • *Instructor Edition*: ISBN: 0-86552-123-9 $15.50 • **Code: EPRLSI.** *Student Edition*: ISBN: 0-86552-128-X • $14.50 • **Code: EPRLSS**

In this project, students face the challenges inherent in a changing school context. It is intended to help principals-in-training gain additional insight into how people respond to change and to learn more about the leader's role in supporting, stimulating, and guiding change within the school environment. Specifically, students contend with the problem of a veteran school faculty facing multiple changes in their work context over which they feel little control.

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___ *Implementing Problem-Based Learning in Leadership Development* by Edwin M. Bridges and Philip Hallinger
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___ copies @ $12.95

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___ *Managing Technological Change* by Philip Hallinger, Joseph Slowinski, and Brenda Rodriguez
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TEACHING NOTE

OVERVIEW

As schools enter the twenty-first century, the mounting costs of accommodating higher enrollments and of renovating aging school buildings will absorb much of the money allocated to elementary and secondary education in the United States.* The potential result may be less funding available for technology. If federal and state funds for technology in schools diminish as we expect, school administrators will be forced to develop creative methods to develop and fund long-term sustainable technology plans. In search of revenue, public school administrators will increasingly turn to partnerships in an effort to fund a sustainable and long-term technology plan.

School district decision-makers who examine the possibility of courting private partnerships will confront several relevant issues. For example, how will school districts adequately train teachers to utilize technology effectively in the learning process? Is it ethical to welcome corporate involvement in the schools in exchange for needed financial and technical resources? How can schools remain modern with advancements in the field occurring so rapidly? These questions must become part of a reflective process embedded within the development of a technology plan and subsequent efforts to generate funding from philanthropic organizations or corporations to support this plan.

This PBL project will guide participants through the plethora of critical issues relevant to information technology in schools as well as prepare them for comprehending the process of soliciting funding from external sources in an effort to support and sustain a long-term technology initiative in their schools. Participants will explore the demographics of a hypothetical school district in an effort to develop a technology plan for that district, and they will reply to a request for proposals for available funding from a local philanthropical organization. Through engaging in these processes, students will gain a metacognitive mental model of the critical steps involved both in creating a sustainable technology plan and in identifying relevant funding and writing an appropriate grant proposal.

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* For information about surging enrollment around the United States, see National Center for Educational Statistics (1998). *Projections of Education Statistics to 2008*. Washington, D.C.: Office of Education Research Improvement, U. S. Department of Education (www.ed.gov).

For information about school buildings, see National Center for Educational Statistics (1999). *How Old Are America's Public Schools?* Washington, D.C.: Office of Educational Research and Improvement, United States Department of Education (www.ed.gov).

RATIONALE

As of 1998, more than 85 percent of public schools in the United States had access to the Internet (National Center for Educational Statistics, 1998; Market Data Retrieval, 1998). Much of this access was made possible by federal and state funding. At some point, local school districts will be forced to examine alternative sources of revenue not only to improve access to technology but also to provide resources to train and empower their staffs to utilize this technology—both to enhance learning and to improve efficiency for daily operations.

One potential solution is external philanthropic and corporate grant funding. In 1997, corporate donations in terms of dollars to education topped 24 percent of all donor activity, or 3.84 billion dollars out of a total of 15.98 billion dollars (The Foundation Center, 1999). For the proactive administrator, funding is available to support technology in schools.

Yet, access to needed hardware and software is merely one of a cluster of critical issues surrounding the implementation of technology in education. For example, access doesn't guarantee teacher or administrator use in the classroom. According to Market Data Retrieval (1998), only 14 percent of teachers indicated that they used the World Wide Web for instructional purposes, though 85 percent of schools reported access. Teachers' use of the Web appears to be on the rise, however, as a more recent survey by the Center for Research on Information Technology and Organizations found 50 percent of teachers stating that access is essential (Becker, 1999). More important, 68 percent of these teachers reported using the Web to locate information for instruction, with 28 percent stating that they do this weekly. Furthermore, 59 percent of teachers have access to the Internet at home, with less than a quarter reporting no access at home or at work.

What is clear from these data is that many teachers zealously embrace technology for education, whereas others are reluctant, for whatever reason, to use technology in the classroom. The latter group remains sufficiently large that administrators must also address the issue of staff utility of technology in the classroom.

Information technology is transforming the world in which we live. Teachers and administrators can employ this technology to increase communication and gain access to resources to improve their work. Students can use it to engage in self-directed learning. Students also need access to technology to prepare themselves for the fast-emerging information age in which a majority of jobs will relate to information technology. By 2006, the Bureau of Labor Statistics forecasts that more than 1.9 million jobs will exist

in the information technology sector alone. To fill these 1.9 million jobs, the United States will need more than one million new information-technology workers (Department of Commerce, 1999).

What role does the administrator play in fostering and soliciting resources to support the development of technology in schools? Moreover, how can they themselves use technology to improve their work as principals and superintendents? Each school and district is different. But, one fact remains certain. Technology is here to stay and public schools must begin to play a more active role.

Consequently, each administrator, along with his or her school board and teachers, must examine some fundamental issues related to the presence of technology in school: Does technology support improved learning? How do we fund technology for a prolonged period of time? How do we provide support and incentives for teachers to learn how to use technology effectively in the classroom? This exercise will help guide participants through the process of exploring this issue more fully.

PREPARATION FOR FACILITATION (PRIOR TO PROJECT)

1. CONSIDER ADULT NEEDS

As an instructor or professional development facilitator, you are very aware of the fact that adults learn very differently than do children. Consequently, the study of andragogy should be considered in the development of any PBL activity with adults. According to Knowles (1989), adult learners:

- need to know why they need to learn something
- need to be self-directed as well as be seen as self-directive
- have a wealth of personal and relevant experience to draw on
- desire to learn things that correspond with being able to do what they need to do in their real-life work
- are motivated by intrinsic rewards

Try to keep these issues in mind as you adapt the PBL activity to your instructional objective.

For a quick overview of andragogy visit the following websites:

- http://archon.educ.kent.edu/~nebraska/curric/ttim1/artsum.html

- http://www.ncrel.org/sdrs/areas/issues/educatrs/profdevl/pd2lrnex.htm
- http://www.uophx.edu/Joehe/curiosity.htm

2. GROUP SIZE

Participants in this project will be assigned to roles on planning committees, each recommended to include eight members. Feel free, however, to modify the group size to accommodate your class size and its characteristics. At the minimum, each committee should include the roles of principal, two assistant principals, and two teachers. Consider adding the potentially critical roles of librarian and technology support staff as well. These roles will help to ensure a real-world scenario of a representative planning committee.

3. COMPUTER LAB

We recommend that a computer lab with Internet connections be used to provide participants with access to relevant websites included in the Resources section. An alternative is to assign participants the task of reviewing these sites prior to the date of the actual PBL activity.

In addition to the experience participants will gain from using technology in the preparation of their proposals, another benefit is the ability of the facilitator to model the use of technology.

In a computer lab, participants can surf the Internet to obtain information as well as use presentation software such as MS Power Point to organize and display their work to their colleagues.

If participants will not have easy access to the Internet, provide everyone with print copies of relevant materials.

4. ADDITIONAL ASSISTANCE

Due to the diverse nature of this PBL task, it is recommended that the facilitator arrange for additional individuals to help in the facilitation process. These individuals could have direct relevance to the task at hand. For example, you could consider representatives from area schools who have been successful in developing a technology plan and/or generating revenue through grant writing in their schools.

If you want to include area school representatives, invite a group that represents the positions in your planning committees. This will allow students more comprehensive exposure to these roles. As active participants, these individuals can function as experts as well as additional facilitators. If this is not practical, obtain written statements from area school staff members who have exhibited expertise in technology or in forging partnerships with corporate or foundation donors. These statements could take the form of interview questions or minibiographies that outline the staff members' duties with sufficient detail to clarify participants' corresponding roles.

5. PROFESSIONAL DEVELOPMENT OPPORTUNITY

If this PBL project is being used for professional development in a school or school district, the facilitator along with relevant staff should identify potential donors and incorporate the solicitation of those donors into the real-life task of creating a technology plan and supporting this plan through grant writing. We also highly recommend that you ask participants to use the technology-audit software (the Learning with Technology Profile Tool) described in the Resources section.

FACILITATING (DURING THE PROJECT)

1. ASSIGN ROLES

For each group, assign and clarify the role each member will play. As suggested above, it is recommended for preservice administrators that a biography be provided to each participant to assist group members in envisioning their roles and actions. In the event that school or district staff members are present, encourage participants to ask these individuals questions about the process (and the roles they played) that occurred in the development of their school or district technology plan and subsequent grant writing. This will help clarify the role being played by each participant.

2. ENCOURAGE ALL MEMBERS OF THE GROUP TO PARTICIPATE

Each group should outline a work plan for getting the problem completed in the allocated time frame.

AFTER THE PROBLEM

After the completion of the problem, ask participants to reflect on questions similar to the following:

- How effective were we as a group in developing a technology plan?
- How effective were we at writing a proposal?
- What were the barriers that emerged that prevented us from completing better products?
- What information would have improved our ability to complete a better project?
- How realistic is our plan? What would have to be done to make it more realistic and thus enhance the potential for success?
- What potential barriers exist to implementing the technology plan?
- How can feedback be regulated and obtained during implementation of the plan?
- Were there ethical considerations that emerged? How were these dealt with? How could these be dealt with?
- What have you learned as individuals?

RESOURCES TO IMPROVE THE AUTHENTICITY OF THE PBL ACTIVITY

To promote the use of technology in this PBL project, we have included numerous World Wide Web resources that provide the instructor and participants with relevant, easily accessible material. We suggest that the instructor incorporate these resources as well as others not only to enhance the authenticity of the project but also to model the effective use of technology in an administrator's work.

Prior to introducing this problem to your class, review the suggested resources for inclusion as support materials. These real-world resources can be utilized to enhance the process for you and your students.

Be aware that Web resources (these were last checked in September 1999) do not have the permanence of the printed page; by reviewing them in advance, you can verify their continued availability and notify your class if URLs have changed or some pages are no longer posted.

CATCHING THE WAVE

> Every few hundred years throughout Western history a sharp transformation has occurred. In a matter of decades, society altogether rearranges itself. Fifty years later a new world exits. And the people born into it cannot imagine the world in which their grandparents lived and into which their own parents were born.
>
> Peter Drucker
> *Managing in a Time of Great Change*

The latter half of the twentieth century has witnessed the emergence of a world that would indeed have been difficult to imagine two generations ago. The scope and the pace of change have created a challenge for all social institutions. Of all the factors propelling this wave of change, none is more significant than the rapid development of new technologies. By 2006, the Bureau of Labor Statistics forecasts that more than 1.9 million jobs will exist in the information technology sector alone. To fill these 1.9 million jobs, the United States will need more than one million new information-technology workers (Department of Commerce, 1999).

THE CHALLENGE FACING SCHOOLS

The capacity of society to cope with change in general and particularly those changes wrought by new technologies depends in no small part on our schools. How else will children learn the skills needed to use and to create new technologies? Access to technology as well as development of the tools for using technology will have an increasingly large impact on the life opportunities of children. All schools must be able to provide access to this critical knowledge.

Yet, schools often remain islands of tradition in the midst of an ocean of change. Many of the people who teach in and administer schools lack familiarity with rapidly changing technologies. According to Market Data Retrieval (1998), only 14 percent of teachers indicated that they used the World Wide Web for instructional purposes, though 85 percent of schools reported access. Teachers' use of the Web appears to be on the rise, however, as a more recent survey by the Center for Research on Information Technology and Organizations found 50 percent of teachers stating that Web access is essential (Becker, 1999). More important, 68 percent of these teachers reported using the Web to locate information for instruction, with 28 percent stating that they do this weekly. Furthermore, 59 percent of teachers have access to the Internet at home, with less than a quarter reporting no access at home or at work.

What is clear from these data is that many teachers zealously embrace technology as a learning resource, whereas others are reluctant, for whatever reason, to use technology in the classroom. The latter group remains sufficiently large that administrators must address the issue of staff utility of technology in the classroom to head off a highly dysfunctional situation. What will be the consequences if some schools, by virtue of personnel and resources, become technology lighthouses while other schools are left in the dark technologically?

The extent of this challenge becomes clear when we consider that in two short years the Internet went from being the proprietary domain of university academics to one of the most widely used new technologies. Even now, educators are wrestling with how such technologies can be harnessed to improve learning. This is no less true of interactive multimedia technologies. How can schools most effectively use technology to benefit children?

Surveys indicate that principals often lag behind teachers and even students in the use of technology. While this is not in itself surprising, it has profound implications for schools. Significant changes in teacher practice are difficult to bring about without the active support of the principal. Yet, without knowledge of how technology can foster learning and without skills in change implementation, chances for successfully realizing the promise of new learning technologies seem slim.

YOUR CHALLENGE IN THIS PROJECT

In this PBL project you will be placed in the role of a principal who is confronting the problem of how best to implement new learning technologies in the schoolhouse. You will face typical issues such staff resistance, budgetary constraints, and perhaps your own lack of knowledge about the technology. In the project, you will learn about new models for using technology in learning, what we know about the impact of new technologies on student learning, how technology can be used as a vehicle for restructuring, and how to develop an implementation strategy that addresses the needs of students, teachers, and parents. As a finished product, you will develop a long-term technology strategy and plan as well as write a grant proposal to receive funds from a philanthropic organization.

LEARNING OBJECTIVES

You will gain the following knowledge and skills from this project:

1. Understand common misconceptions about educational technology.
2. Know how learning technologies can foster effective instruction.
3. Develop an effective change strategy that uses technology as a vehicle for restructuring teaching and learning.
4. Be aware of the range of models for planning for and using technology in schools.
5. Be able to use data on teaching/learning and technology usage to develop an effective strategy for technology implementation.
6. Comprehend the process of grant-writing in an effort to generate private funds to support public education.

THE PROBLEM

Setting: February 6, monthly meeting of all Administrators at the Education Office, in Mid-City. The meeting is chaired by Dr. Lois Zabriskie, superintendent. In attendance are the district's eighteen principals and six central-office administrators.

Dr. Zabriskie (Superintendent):

"So, this brings us to the final agenda item, the State Education Department's 21st Century Technology Initiative. It's been on the TV and in the newspapers (see Appendix D) and we distributed the information we have received from the state to all of you. Peter, give us a brief rundown on the main points."

Mr. Peter Hunt (Ass't Superintendent for Curriculum and Instruction):

"Well, without going into the politics that led to this, let me summarize. The State Superintendent is trying to make good on his claim that we will lead the country in bringing technology into the schools. I think the *Mid-City Banner's* headline captured the key point pretty succinctly: 'All schools in our State will provide access to technology for all students'.

"The initiative calls for all schools to be able to demonstrate that they are using new *technologies* appropriately, widely, and for all students within a five-year period. Note also that the mandate seeks for schools to use technology both for the purpose of literacy—for example, how to use the Internet, computers, software, etc.—and also as one means of instruction.

"Toward that end, he's insisting that all schools develop Learning Technology Plans (LTPs). This is the most relevant part for our meeting today. By August 15th, every school must submit an LTP to the Bureau of

Planning and School Improvement. The LTP is a three-year plan that outlines the school's goals for technology implementation and the steps it will take to achieve them. As far as I can tell, they don't expect a great deal of detail in the first submission, but the plan will have to be updated annually with increasing amounts of details including evaluation results. The format for the LTPs has already been distributed to your schools."

Mr. Jake Kanter (Elementary Principal):

"I wish they would stop calling these *mandates* initiatives. It's not like we have any choice in doing these initiatives anyway, so why bother dressing them up with fancy language. This is just one more thing we have to do because *they* say so!"

Mr. Charles Allen (Ass't Superintendent for Business):

"And without any additional resources to support it! This is fine for communities like Westin and Crawford where they're rolling around in money, but what are we supposed to do?"

Dr. Zabriskie (Superintendent):

"We're supposed to find a way to make this happen, and that's the purpose of our discussion today. Ideas?"

Dr. Jane Pierce (High School Principal):

"Well, it seems to me that many of us have already been moving in this direction. Is there a way to use this to build on what we're already doing?"

Mr. Joe Cronin (High School Principal):

"What about those of us who already have computer labs running in our schools? What else would we have to do to meet their expectations?"

Ms. Jan Crothers (Middle School Principal):

"Yeah, would my interactive multimedia program in human biology qualify?"

Mr. Peter Hunt (Ass't Superintendent for Curriculum and Instruction):

"It should, but as I said, the expectation is that technology will be integrated into the school more than has been the case. That means we have to look at the curriculum—where students get access to technology training, and instruction—how we're using technology to teach in the classroom."

Mr. Jack Krouse (Middle School Principal):

"I've got three teachers in my social-studies department who are using Internet with their classes. I think they've got modems or some-

thing for e-mail. But not many of my other teachers have gotten into this yet."

Ms. Mary Stewart (Elementary Principal)

"My intermediate teachers have decided to set up computer stations in their classes for drill and practice since their math scores fell down last year. Is that what they have in mind?"

Mr. Peter Hunt (Ass't Superintendent for Curriculum and Instruction):

"You know how these initiatives are—it's really pretty vague; they just give you the big picture. Then you have to fill in the details."

Mr. Jake Kanter (Elementary Principal):

"And a lot of paperwork, without added time. How will I find time for my staff to learn how to use this stuff? Heck, I don't even have people on my staff who know enough about this stuff to develop a plan!"

Mr. Charles Allen (Ass't Superintendent for Business):

"Without any more money, this is going to be tough to swallow, but we are working on freeing up some funds for this."

Mr. Art Shultz (High School Principal):

"Well, look at it this way. They could be telling us we *have* to be doing something that we don't think we should be doing anyway! Is there anyone here who doesn't think that we *should* be preparing children to use technology? Or that our teachers *should not* be learning how to use technology for instruction?"

Mr. Jake Kanter (Elementary Principal):

"Art, I guess you can look at it that way if you think you can already meet their mandate's requirements, but for those of us who. . . ."

Dr. Zabriskie (Superintendent):

"Okay, let's try to redirect this discussion toward what we can agree that we have to do. From what Peter has told us and my own quick review of the initiative, there is no question that all of you will have significant work to do both in terms of planning and implementation. *There is no school in this district who could currently meet the expectations built into this initiative.* Correct Peter?"

Mr. Peter Hunt (Ass't Superintendent for Curriculum and Instruction):

"No question about that. Note also that this initiative focuses on the use of technology in teaching and learning only, not in management."

Dr. Zabriskie (Superintendent):

"All of you have resources in your school that represent starting points for planning and implementation. You have some equipment, some software, and some staff who know to use the equipment. You all have parents in your communities who place great importance on technology; they will be looking at this initiative closely. You have students who already have skills—maybe more than some of us—and you also have businesses in the community who will be willing to support sound plans and maybe even assist in your planning.

"In fact, that's how I'd be inclined to look at this initiative. Not as a mandate—though of course we have to do it—but as a means of thinking and planning more systematically about something of importance which, as Art noted, we ought to be doing anyway. Maybe without the initiative we'd all continue doing our own little things piecemeal in different schools, depending upon whether we had a couple of teachers who happen to be techies. That does not seem to be in the best interests of our students."

Dr. Carl Hanson (Deputy Superintendent):

"And all is not as gloomy as it might be. The local Kerwin Foundation has contacted us and indicated that it will provide funding for up to eight *model schools* drawn from our district as well as Crawford and Essex to facilitate implementation of the mandate. The money isn't huge — $100,000 over three years—but it's something to supplement local funds. They are interested in encouraging different approaches to implementation of technology in schools. They will pick schools based on soundness of the plan, not on how advanced the schools already are. Here's what I've gotten from them in the form of a Request for Proposals (see Appendix A). *Note that the RFP is in an identical format to the LTPs, so there is no duplication of effort here."*

Dr. Jane Pierce (High School Principal):

"When are they due and how long is the proposal?"

Dr. Carl Hanson (Deputy Superintendent):

"The good news is they're short — limited to no more than five typed pages (single-spaced). The bad news is that they're due on March 5th, one month from yesterday. They will select the plans during April so that other schools can see them as they develop their LTPs this summer. So the clock is ticking for schools that wish to try for this funding. I am hoping that many of you will be among those schools who go for the special funding."

Mr. Jake Kanter (Elementary Principal):

"Well, at least it's not a SED grant. I think I'll die before I try doing the paperwork for another of those grants."

Dr. Zabriskie (Superintendent):

"All right, now I'm going to place Carl in charge of coordinating the district's response to the state initiative. Peter's office will be a resource to those of you who want assistance in developing your LTPs and also for any of you who decide to go for the grant. I really hope that some of you will despite the tight timeline.

"Let me also say that there is also a lot of activity going on in the district in technology already. It would be a shame if we did not take advantage of this. So, I would like all of you to build into your plans some means of accessing each other's capacities in this area and also for sharing what you are doing. Given the uneven distribution of expertise across the schools, this is the only realistic way we have of doing a quality job of meeting this challenge. Thank you."

Setting: 3:00 p.m., February 8: Faculty Meeting in the library of Horace Mann Middle School.

Dr. Claymore (Principal):

"The last agenda item concerns the new 21st Century Technology Initiative announced by the State Superintendent last week. I distributed to all of you a summary of the key points of the initiative for your review yesterday. Are there any questions about the substance of the initiative?"

Jack Walsh (Math Teacher/Coordinator):

"Well it sounds like they've finally gotten serious about trying to get schools up to speed in using technology. It's about time! We finally figured out how to get a CD-Rom player hooked up to one of the computers in our department It's slow, but a couple of my teachers have been using it to introduce students to more complex problem-solving using visual images. They're excited, but frustrated by the lack of technical support and it is still slow."

Jane Burns (Social Studies Teacher):

"Yeah, but speaking of equipment, notice that the state superintendent forgot to include money for equipment."

Paul Smith (English Teacher):

"Yeah, it's like all the State Superintendent has to do is to decide that we all have to use computers, and that's it—it's done."

Tim Carpenter (Science Teacher):

"Well, it's not like we don't already have a head start on this at Horace Mann. You know, Janet Starr and I managed to get modems hooked up to phone lines to our classrooms—her son came over and did

it—now we're accessing a lot of material on human biology for our science courses. The kids have loved it! You know, *this is the thing we can't afford not to do.*"

Peter Simkins (Social Studies Teacher):

"That's news to me. I didn't even know we had any way to access the Internet inside this school. But if we do, I still worry about students getting access to pornography over the Internet. What do you do about that?"

Jane Burns (Social Studies Teacher):

"Yeah, Tim, it's fine to say that there's all this technology stuff for science but what about for social studies? And what about the equipment?"

Jack Walsh (Math Teacher):

"But, that's the point, we do have some technology in the school already. Several teachers in my department have been using computers in pre-algebra classes. We just haven't really looked at what we have, what we want to do with it as a department or as a school, and so we are clueless about what we need. Some departments and grade levels completely ignore the lab, others overuse it. Some teachers have rigged stuff up in their classes but nobody else even knows about it."

Pat Campana (Language Teacher):

"Speaking of labs, Dr. Claymore, does our language lab qualify as technology under the initiative or do they just mean Internet-type stuff?"

Dr. Claymore (Principal):

"Yes, it does. It's not just Internet or computers, but the whole range of technologies that can be used to support teaching and to foster learning. To be honest, though, I'm not even sure what that range is.

"The state's initiative is really broad; it seems designed to jump-start schools—to light a fire under us—not to tell what or how to do it. The bottom line is they want to see schools integrating technology into instruction throughout the grades and subjects as teachers deem appropriate."

Jane Burns (Social Studies Teacher):

"And once we spend a lot of our time planning that, what then? Where will the funding come from?"

Dr. Claymore (Principal):

"I think your concern is legitimate, but it may be premature. As several people have mentioned, we're doing some things here already.

We can use this as an opportunity to review what the staff is doing and then move ahead. In fact, we already have collected some data on staff usage of technology at the end of last year, but never had a chance to look at them as the basis for planning.

"In addition, there is some grant money available to us if we move quickly. The Kerwin Foundation is offering supplemental money for both training and some equipment. The timeline is ridiculous—one month—but as I see it, it makes sense to try to go for the grant, particularly since we will need to respond to the initiative anyway in the spring and the format is identical. It's only a matter of timing and nobody else has any more time than we do to go for it. (See Appendix A.)

"I've discussed this informally with all the Team Leaders and the consensus is that we try for the Kerwin funding. I will convene a committee to work on this. I know you are all busy and we will attempt to keep this from being an additional burden on you. If, however, you would like to assist the committee in any way, please let Mary know. She'll be coordinating work on the grant. Thanks."

Setting: 4:30 p.m., February 8, Meeting of the Principal, two Assistant Principals, and five Team Leaders at Horace Mann Middle School

Dr. Claymore (Principal):

"I asked the seven of you to meet with me today because of the item I raised today at the faculty meeting about the 21st Century Technology Initiative. I've talked this over with several of you already informally and there doesn't seem to be any reason not to go after the Kerwin Foundation grant. It only asks us to do the same planning we'll have to do anyway for the LTP, but sooner. Any suggestions at this point?"

Mr. Jack Masterson (Assistant Principal):

"So we are the planning committee?"

Dr. Claymore (Principal):

"That's right. I'll sit on the committee, but Mary will chair it since she really knows more about the big picture on technology than me. She has already done a lot of thinking about this. Also, there will need to be a lot of details gathered in a short time and I'll be away for several days next week and again at the end of the month. Mary?"

Mary Fillmore (Assistant Principal):

"Dr. Claymore gave me the RFP to review. The main elements we need to focus on are:

1. Vision of Technology
2. Needs of the School

3. Implementation Goals
4. Activities for Implementation
5. Budget/Resources
6. Evaluation

Take a look at the RFP."

Paul Stern (Team Leader and Math Teacher):
"Well at least the proposal is short!"

Dr. Claymore (Principal):
"Yes, but that means we have to make our plan quite clear in a short amount of space."

Mary Fillmore (Assistant Principal):
"It appears that the key sections, at least initially, will be to articulate a vision of how technology fits into the school's approach to education today and in the future. The next step will be to analyze the needs of our students, the current capabilities of our staff, and the material resources in place.

"Once we have a picture of where we are headed in terms of our vision, philosophy, and needs, then we can develop implementation goals, outline sample activities, and discuss evaluation.

"Today is Thursday. I've pulled together some resource materials that may help us in thinking about some of the key issues. Now obviously the state's mandate is pushing us in a general direction , but we still have a lot of leeway here. Why don't we say that we'll meet again in three days at 3:00 p.m. We should all take a look at some of the resources by then and be prepared to begin the task.

Dr. Claymore (Principal):
"We have pulled together some of the information that's been collected over the past year concerning technology usage in the school. We can draw on some of the survey data collected in August as part of our school audit. We can use that to establish the areas of need and staff capacity (See Appendices B, C, and D).

"I know that this is unasked-for work at a busy time and appreciate all of you assisting here. I think we have a lot of expertise in this committee. However, we will ask other faculty to assist us as needed along the way. Mary is also making arrangements to bring the district's technology resource person and someone from the staff development office in to answer questions that may arise."

PROFILE OF HORACE MANN MIDDLE SCHOOL

Size:	1,200 students
Staff:	Principal, 2 Assistant Principals, 43 Teachers, 6 support staff.
Grades:	Serves Grades 6-8 in a middle-school organization.
Community	Located in a predominantly working-class community that has some light manufacturing and service industries.
SES/Ethnicity	The school's service area is 54 percent White, 28 percent Black, 18 percent Hispanic. Twenty-four percent of the students receive free or reduced lunch.

PRODUCTS

Prepare the following products consistent with resolving the problem presented above.

PRODUCT #1

Analyze the data presented in the problem and in the appendices. Develop a *brief statement of the problem* (one paragraph) you anticipate facing in implementing technology in the school. Follow this with a *list of the key obstacles* you anticipate. Then provide a brief *statement of the change strategies* you will use to meet this challenge and overcome the obstacles.

PRODUCT #2

Use the analysis developed in Product #1 to formulate a proposal for implementing technology in Horace Mann Middle School. The proposal should use the format specified in the Kerwin Foundation's RFP (See Appendix A).

PRODUCT #3

Develop a long-term strategy for sustaining the technology plan that is aligned with the grant proposal.

PRODUCT #4

Prepare a fifteen-minute presentation of your proposal that you will deliver to the Kerwin Foundation Board.

PRODUCT #5

Write a one-page letter to be published in the *PTA Bulletin* explaining the rationale for this plan to your school community.

GUIDING QUESTIONS

1. What does the pattern of staff readiness for change suggest about where to begin your strategy? Who should you recruit early on to assist you? Why?
2. Which types of obstacles would you expect to encounter early in the change process? In years two and three?
3. What will the predominant pattern of staff needs be in year one? Two? Three? What does this suggest about your change goals and activities?
4. How will the activities designed to support teachers shift over the three-year period? Why?
5. Specify the ways in which learning technologies are being used in schools? What are the characteristics of Horace Mann Middle School that seem salient when considering what type of model to implement (e.g., a computer lab vs. in-class computer)? How can you bring technology to bear on instruction so that it links to more effective instructional practices? What would these look like?
6. What strategies will you use to integrate technology into the fabric of the school rather than as a distinct program? How will you involve parents? How can you create a community of learners that reinforces implementation across classrooms, between school and community, from school to school?
7. What assumptions about current resource allocation might be reconsidered in light of the effort to bring technology into the school in a significant way? What are the primary areas in which new funds would be needed?
8. What factors need to be considered in the development of a long-term and sustainable technology plan (e.g., what steps can be made to ensure a process of updating and replacing computers and other emergent technology)?
9. What ethical considerations should be taken into account when developing a long-term technology plan?

RESOURCES

To give you hands-on experience with information technology, this PBL project makes extensive use of electronic resources. You will use technology-audit software (the Learning with Technology Profile Tool) and obtain from the World Wide Web pertinent information for completing this project. These resources should not only enhance the authenticity of the project but also allow you to gain more experience using the Internet.

LEARNING WITH TECHNOLOGY PROFILE TOOL

The Learning with Technology Profile Tool is a computer program intended to help educators think carefully about their practice in the areas of engaged learning and technology. The tool was developed by the North Central Regional Technology in Education Consortium and the North Central Regional Educational Laboratory to support schools in technology planning and integration. It is available as a free downloadable computer program and as a World Wide Web page.

RATIONALE FOR THE TOOL

The increasing accessibility of the Internet, advent of high-performance technologies, and widespread acknowledgment that technology should play an important role in education are all pressuring schools to develop, implement, and evaluate technology plans. However, planning for technology integration is difficult when most members of the school planning team have little technical experience. More significantly, these individuals typically have limited visions of how to plan for technology because they have not seen many cases of students and teachers using technology in innovative ways that result in engaged learning. Furthermore, school teams lack the tools necessary to assess whether implementation of their plan is resulting in technology-supported, engaged-learning experiences for their students.

HOW THE TOOL WORKS

This profile tool will help educators to compare their current instructional practices with a set of indicators for engaged learning and high-performance technology. For each category, there is a description of the indicators and examples that fall along a continuum. There are three examples. For each indicator, educators can select the one response out of three available choices that best corresponds to its practice. When finished, respondents can view the results in a graphical format to help identify the strengths and weaknesses of their learning and technology practices.

The tool is not intended to rate a teacher's or administrator's skill or ability, but rather to help them think through the kinds of activities they use to help their students learn. They can use the graph to help clarify their thinking about what types of activities they would like to use more frequently in their classroom and school.

The tool takes about 30 minutes to complete.

The Learning with Technology Profile Tool is available as a downloadable computer program (both Windows and Mac versions) or on the World Wide Web at http://www.ncrtec.org/capacity/profile/profile.htm

USE OF THE TOOL WITH THIS PBL PROJECT

Your instructor will explain how to fill out the Learning with Technology Profile Tool for the purposes of this project. He or she may ask you to complete this activity alone or as a group. For each indicator, you will select an example that best describes the current practice of Horace Mann Middle School or in an individual class or department within the school, as directed by your instructor. You will choose responses to the indicators that most closely correspond to the information about Horace Mann's technology usage and equipment given in Appendices B and C and elsewhere in the problem's description.

WEBSITE RESOURCES

The World Wide Web resources listed below explain how to locate and solicit available grant funds, secure donated computer equipment, and obtain technical assistance on the educational uses of technology.

Funding Resources—Available Grant Money

Comprehensive School Reform Demonstration Program (CSRD)

http://www.ed.gov/offices/OESE/compreform/

Through Comprehensive School Reform funding, local schools are eligible for up to $50,000 for three years. One program funded through this initiative is Co-nectSchools (http://www.co-nect.com/). Co-nectSchools integrates technology into all aspects of school life including professional development and student learning. Co-nect supports schools interested in integrating technology into schools to support improved teaching and learning.

Exploiting Technology Grants: Information Resources

http://www.unc.edu/cit/guides/irg-07.html

A resource produced by the Center for Instructional Technology, University of North Carolina, Chapel Hill, and written to guide grant seekers to relevant resources.

The Technology Education Lab

http://www.techedlab.com/grant-funding.html

Provides information about potential funding organizations that support technology initiatives in education. Grant-writing resources are also available.

The Foundation Center

http://fdncenter.org/

A centralized database offering connections to thousands of potential grants. Includes a weekly e-mail newsletter, "Philanthropy News Digest." In addition, TFC offers "The Foundation Center's User-Friendly Guide to Funding Research and Resources," which includes assistance with proposal writing.

United States Department of Education, Office of Educational Technology

http://www.ed.gov/Technology/

Includes an overview of each federally funded project, including information on what is required in writing successful grant proposals. In addition, information on the e-rate and other federal resources is included as well as available research and publications.

1999-2000 School Technology Funding Directory

http://www.eschoolnews.com/pubs/stfd_benefits.html

The *School Technology Funding Directory: The K-12 Decision Makers Guide to Federal and Private Funding*, edited by Rebecca Flowers in 1998, is available from eSchool News for $95. ISBN: 1-890773-03-4.

Computer Equipment

Detwiler Foundation

http://www.detwiler.org/national.html

Under current tax law, corporate entities can earn a tax credit for donating computer equipment to schools. To encourage corporate donations, proposed legislation would increase the credit associat with the 21st Century Classrooms Act to the equivalent of 30 percent of the donated hardware and software.

The Dewiler Foundation has a program, "Computers for Schools," that operates as a centralized location to obtain corporate donations and to disseminate computers to local schools throughout the U.S. In 1998, 12,685 computers were donated to 774 schools in 12 states (about two-thirds of the computers went to one state—California).

For older, refurbished computers, a new program called NewDeal (http://www.newdealinc.com/productsn/) offers a software package that supports Web browsing, e-mail, and chat on PCs with as little as a 286 processor, 640k RAM, and 10 MB of memory for approximately $50. This brings new life to older computers.

In addition to the Dewiler Foundation, the federal government also offers free computer equipment to schools and other nonprofit educational institutions. For more information, visit http://www.computers.fed.gov/

ZapMe!

http://www.zapme.com

ZapMe! provides schools with up to 15 personal computers with Internet access. In exchange for the product advertisements in the ZapMe! interface, similar to Channel One, schools receive the PCs and connections for free. Participating schools receive a network server, satellite, 15 computers with laser printer, and 17" monitor.

Technical Assistance & Teaching/Learning with Technology Resources

Tech Corps

http://techcorps.org

This volunteer organization of technology professionals attempts to build local capacity through the establishment of state and local technical assistance staff who volunteer to serve in local schools. The mission of Tech Corps is to help all students gain "access to the most technologically advanced education possible to ensure that they will have the skills needed to compete in the workforce of tomorrow." At the Tech Corps website, you can find out if your state is currently participating. If there is no program in your state or community, contact Tech Corps and make an effort to develop one.

ERIC Clearinghouse on Information & Technology

http://ericir.syr.edu/ithome/

The ERIC Clearinghouse on Information and Technology provides a variety of resources for implementing and using technology in the classroom.

Network of Regional Technology in Education Consortia

http://rtec.org/

The Regional Technology in Education Consortia (R*TEC) program helps states, local educational agencies, teachers, school library and media personnel, administrators, and other education-related entities

integrate technologies into K-12 classrooms, library media centers, and other educational settings, including adult literacy centers.

21st Century Teachers Network

http://www.21ct.org/

The 21st Century Teachers Newwork is a voluntary organization helping teachers to integrate technology into their teaching and learning. As teachers grow and become more empowered as individuals, they are asked to share their knowledge and skills with five other teachers. This organizations has developed partnerships and is endorsed by the National Education Association, National School Boards Association, Software & Information Industry Association, TECH CORPS, American Association of Colleges for Teacher Education, International Society for Technology in Education, National Association of Secondary School Principals, and American Federation of Teachers.

Tech.LEARNING

http://www.techlearning.com/

This site is dedicated to sharing information on how to effectively integrate technology into teaching and learning. Its mission is to serve educators with ideas, tools, and resources for integrating technology into the K-12 school, classroom, and curriculum.

Classroom Connect

http://www.classroom.com

Includes resources for teachers who want to integrate the Internet into their teaching and learning. Lesson plans, suggestions, and resources are available.

Milken Exchange on Education Technology Professional Development Continuum Conference Resources

http://www.milkenexchange.org/pdc/pdc_resources.html

Includes links to more than twenty-six sites focused on technology in education professional development. Includes guidelines on the following four areas of professional development: Classroom & Instructional Management; Curriculum, Learning, and Assessment; Core Technology Skills; Professional and Collegial Practices.

Milken Exchange on Education Technology: Learning Technology Policy Counts

http://www.milkenexchange.org/policy/statepolicy.html

Site dedicated to providing a variety of education technology data on all fifty states. Data include emergent trends, legislation, state profiles, and other important policy information.

American Association of School Administrators Technology Section

http://www.aasa.org/Technology/technology.htm

Offers a variety of technology-related resources for school administrators, including news, resources, and other relevant materials. Includes the full-text article "Technology Literacy for Administrators," available at http://www.aasa.org/SA/apr9902.htm, from the April 1999 issue of *School Administrator*.

ParenTech

http://www.parentech.org

ParenTech is a unique technology-information initiative to educate families about the ways technology is changing how we learn, work, and live. It provides parents of middle-school-age children (grades 6-8) with resources and tools to guide their children toward successful futures. ParenTech brings together the latest research, inspiring stories, practical tips, and places to go to learn more—all in a parent-friendly kit of resources focused on three topics: The way we learn—Technology and Education; the way we work—Technology and Careers; the way we live—Technology and Society. ParenTech also reaches out to middle schools with informative Teacher Guides, a principal's tip sheet, and a colorful poster.

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APPENDIX A: KERWIN FOUNDATION REQUEST FOR PROPOSALS

THE KERWIN FOUNDATION

Children are our Future!

The Kerwin Foundation is pleased to provide new support for technological innovation in the region's schools. We at the Foundation believe that technology represents the newest uncharted territory for education. Moreover, we believe that it is teachers, parents, and students, through their daily efforts at shared learning, who will discover the future of technology in our schools.

Therefore, The Kerwin Foundation is making available innovation grants of $50,000 per school for a three-year period beginning July 1. Fifty grants will be awarded in the tri-state region. No more than four schools from a single school district will receive awards (Metro schools will compete for funding under a different process).

Request for Proposals

Funds

The Foundation is offering $100,000 for 8 schools within the tri-city region. The funds may be used for equipment, software, training, and supplies. Funds will be made available over the three-year period, with annual allocations being made upon submission of an annual report. The funds will be dispersed as follows: $50,000 in year one, $25,000 in year two, and $25,000 in year three.

Proposed Format and Guidelines

Purpose of the Proposal: This should briefly introduce your proposal and its direction and main goals to the readers.

Needs: What are important needs that will be met by the increased use of learning technology?

Vision: Given these needs, articulate briefly your *vision* of how technology will be used in the school, why, and what successful implementation might look like three years from now.

Goals: Set specific goals for each of three years of implementation: Limit yourself to no more than two goals per year; include a one-paragraph rationale in support of each goal.

Activities: For each goal, specify activities you will use to promote implementation.

Budget/Resources: Resources needed to support implementation. Be sure to separate equipment expenditures from personnel, staff development, and curriculum purchases. How will you spend the money in each of the three years?

Evaluation: Give a short description of how you will evaluate the success of your efforts. While an *evaluation design* is not necessary, The Foundation is interested in (a) the criteria you will use to assess the progress and impact of your effort, and (b) the types of information you will collect annually to determine progress toward your goals.

The proposal is limited to 5 pages, typed single-spaced. Proposals will be judged on the basis of:

- **Clarity of vision and expression**—Is there a clear vision of the long-term role of technology in your school in the future?
- **Need**—Have you clearly identified the key areas of need with respect to technology, teaching, and learning?
- **Feasibility/Prospects for success**—Is the plan practical?
- **Value-added**—How will the funds provided by The Foundation support the school's ongoing efforts to restructure through technology?
- **Creativity**—Even at this early stage, is there some evidence that this is a school that will be able to provide interesting examples for other schools in the future?
- **Impact**—Is the plan encompassed in the proposal likely to offer results in three years?
- **Knowledge sharing**—Is there a plan for linking this school's effort with other schools through some form of networking?

Due Date: March 5

All proposals must be postmarked no later than March 5. Please send four copies of your proposal to:

The Kerwin Foundation
2120 Western Blvd.
Lakeland, IL 37562

APPENDIX B: STAFF SURVEY OF TECHNOLOGY USAGE

RESPONSES TO SKILLS AND USAGE SURVEY

N=49 (includes administrators and counselors) *Responses*

1. How would you rate your expertise with computers?

   a) Excellent skills and very confident 5

   b) Good skills and confident 9

   c) Average skills, but lack confidence for new tasks 11

   d) Limited skills and uncomfortable around them 15

   e) No skills and uncomfortable 9

2. How interested are you in learning to use technology in your teaching?

   a) Eager to learn new skills 8

   b) Open to learning new skills 9

   c) Moderately interested 12

   d) Limited interest, not a priority 10

   e) Not at all interested 10

3. Which types of technology are you currently using the classroom? (Circle all that apply)

   a) Computer-based/Assisted Instruction 19

   b) LCD and computer 3

c) VCR/Television	38
d) Laser/Videodisc Player	6
e) Internet	4

4. Which of the following best describes your use of instructional technologies like computers and/or videodiscs?

a) I don't know how I'd survive without it	6
b) I use if often in instruction	6
c) I use it, but only selectively in my teaching	14
d) I seldom use it	7
e) I have never used it	16

5. What do you see as the biggest obstacles to the school increasing its use of technology in teaching?

a) Lack of skills among staff	41
b) Lack of software/courseware/curriculum	14
c) Lack of equipment	24
d) Lack of interest among teachers	19
e) Lack of interest among students	6
f) Low priority in school/district	12
g) Lack of support staff	28

APPENDIX C: EQUIPMENT INVENTORY

EQUIPMENT INVENTORY FOR MANN SECONDARY SCHOOL

Based on a survey completed at the end of the last school year, the following equipment is available in Mann Middle School.

Lab—One lab equipped with fifteen individual IBM compatible computers; no modems or network; part-time coordinator (a math teacher is released two periods a day to oversee the lab)

TVs—All classrooms have TVs linked to the media center.

VCRs—There are 8 VCRs available on moving carts.

LCD Panel—There is one available through the library/media center.

Laser Disk Player—There is one in the school.

External CD Rom drives—4

Modems—12 (six 14.4 baud, eight 28.8 baud)

Other Computers—There are additional computers throughout the school averaging .8 per classroom. These include:

IBM Compatible	486 - 23
IBM Compatible Pentium	8
Notebooks	486 - 6
Others (assortment)	4

APPENDIX D: NEWSPAPER ARTICLE

STATE SUPERINTENDENT UNVEILS 21ST CENTURY TECHNOLOGY INITIATIVE

"All schools in our State will provide access to technology for all students."

State Superintendent for Public Instruction Dr. William P. Foster unveiled a new initiative today at the annual statewide meeting of the Business Roundtable. Citing economic and employment trends in the state, he noted that "graduates of our schools will need to be able to demonstrate a new range of knowledge and skills in the workplace in coming years. Central to the new workplace will be the ability to use technology. The *21st Century Technology Initiative* will stimulate all schools in the state to address the need to systematically incorporate technology into the schoolhouse. No longer will hit-or-miss usage of technology be acceptable. We simply can't afford it as a state or a society."

Chairperson of the Roundtable, Joe Lockhart, CEO of Brimstone Industries, indirectly supported the initiative in his own remarks. He recounted the shift in metalwork manufacturing from the era of the *Four Ds* in which metalwork was a Dirty, Dark, Dangerous Dungeon. He noted that the old industry simply required education that prepared workers who could follow orders, complete repetitive work, read and calculate at a basic level, and perform physically demanding tasks.

Today international economic competition and the emergence of new technologies have changed the workplace dramatically. Now teamwork, communication, problem-solving, computer literacy, and higher level reading skills were needed.

Lockhart added, "No longer can schools track their future graduates, reserving a higher level of education for those going on to college. All students will need these types of skills to meet the demands of the future workplace."

Other attendees at the meeting seconded this opinion. One CEO, Don Shore of American Semiconductor, noted that he had recently returned from Singapore where he had visited one of their offshore plants. During the trip he had occasion to visit a Singapore Elementary School where students were pressing CD-ROMs for class projects. Shore asked, "Where will our jobs go if our schools cannot produce students who can compete with those abroad?"

In the midst of the agreement over the need for better technology education at all levels, one off-key note was sounded by noted futurist Dr. Mary Ellen Clark. Dr. Clark warned in her address against the unthinking use of new technologies. She underlined the challenge of harnessing technology for education. "Information technology—the Internet, for example—only gives us access to *information*. To understand the information requires knowledge. Applying that knowledge ethically requires wisdom. Are schools, as currently organized, prepared for this instructional challenge?"

Dr. Foster responded by saying that "we will continue to raise the awareness of our educators concerning the pitfalls that befall an unthinking use of technology and we welcome the assistance of noted experts like Dr. Clark.

"Our message today is that the time has passed for us to discuss whether our schools will tap the promise of technology for learning. Technology's inroads into society will proceed with or without the support of educators. Educators must *catch the wave* or be washed away like driftwood... The *21st Century Technology Initiative* does not tell teachers and principals how to implement technology in their schools. It simply tells them that they must. We place our faith in the intelligence and commitment of our teachers and believe they will respond."

Asked for comments on Dr. Foster's speech, William Kiehl, President of the State Teachers Federation, was cautious. He wondered aloud, "If you want schools to look like 21st Century Schools instead of schools of the 1950s, doesn't that suggest that you need a substantial investment? Investment in equipment and investment in people. I don't see it here in the black and white of the state's initiative, but maybe that's part two."

Dr. Peter Paul, President of the State Association of School Administrators, commented: "As always the state's school administrators can be counted on to stand behind the improvement of education. We hope the state will, however, provide the resources and time needed to make sure this is not just another exercise in planning."